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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/720,110

11/25/2003

Takayuki Nakamura

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WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP  
1250 CONNECTICUT AVENUE, NW  
SUITE 700  
WASHINGTON, DC 20036

EXAMINER

LIEW, ALEX KOK SOON

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

05/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/720,110	<b>Applicant(s)</b> TAKAYUKI NAKAMURA	
	<b>Examiner</b> Alex Liew	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 is rejected under U.S.C. 103(a) as unpatentable by Beaty et al. (US pat no 6,064,756) in view of official notice (MPEP 2144.03).

With regards to claim 1, Beaty discloses an apparatus for generating three-dimensional model data of a structural member in directions of at least first and second axes that are perpendicular to each other (see figure 3B – the images taken are two-dimensional, which include two axes perpendicular and the grid of balls is read as the structural member), wherein said apparatus comprises

- imaging means for imaging said structural member to generate image data (see figure 14 – 10 and 15 are camera which captures images of the structural member) and
- model data generating means for, on the basis of the image data generated by said imaging means, generating three-dimensional model data including at least shape data which define a three-dimensional shape of said structural member (see figure 4 – a three dimensional image is generated from images taken in

steps 142 to 146, also the three dimensional image includes shape information of the structural member).

But Beaty does not disclose moving the structural member constituting a machine tool which slides across a belt. It is well known in the art to move a structural member across through a conveyor belt for inspection. One skill in the art would include an apparatus of moving a structural member across a conveyor belt because to allow rapid inspection of multiples of structural members, which need to be inspected.

3. Claims 2 and 4 / 1 are rejected under U.S.C 103(a) as unpatentable by Beaty ('756) in view of Watanabe (US pat no 7,027,963) and official notice (MPEP 2144.03).

With regards to claim 2, Beaty discloses an apparatus for generating three-dimensional model data of a structural member constituting a machine tool in directions of at least first and second axes that are perpendicular to each other (see figure 3B – the images taken are two-dimensional, which include two axes perpendicular and the grid of balls is read as the structural member), wherein said apparatus comprises

- first, second and third imaging means, each of said imaging comprising an imaging section, which captures image of structural member producing two-dimensional image data (see figure 14 – 10 and 15 are camera which captures images of the structural member),
- model data generating means for generating three-dimensional model data including at least shape data which define a three-dimensional shape of said

structural member, on the basis of sets of two-dimensional image data which are generated respectively by said first, second and third imaging means (see figure 4 – a three dimensional image is generated from images taken in steps 142 to 146, also the three dimensional image includes shape information of the structural member), wherein

the first, second and third imagers are positioned away from plurality of locations (see figure 14 – the three cameras are positioned at three different positions).

Beaty does not disclose cameras positioned at a three-dimensional location, wherein each camera are positioned on each axis parallel to each axis, horizontal, vertical and depth axis.

Watanabe discloses retrieving two-dimensional shape images representing shape data of an object from the top and the two side perpendicular to each other (see figure 8A – in screen 21, shows three views of a workpiece taken from the three perpendicular axes, horizontal, vertical and depth, column 6 lines 40 – 50) and using the retrieved CAD images to generate a three-dimensional image of the workpiece from the two-dimensional images (see figure 8C – shows three-dimensional shape of the workpiece, also see column 6 lines 63 – 67). One skill in the art would capture images parallel to coordinate axes because the imaging lines parallel to the cameras are use as origin for all respectively axes, which decrease the complexity of determining the position of the object.

Beaty also does not disclose having a pair of cameras from each location shown in figure 14. However, it is well known in the stereoscopic art to use at least two cameras,

separated by a predetermined distance, to obtain stereoscopic images to generate three-dimensional images. One skill in the art would include a pair of camera to capture stereoscopic images because to prevent the cameras to have to move to capture second stereoscopic image to increase speed of inspection.

Also Beaty does not disclose moving the structural member constituting a machine tool, which slides across a belt. It is well known in the art to move a structural member across through a conveyor belt for inspection. One skill in the art would include an apparatus of moving a structural member across a conveyor belt because to allow rapid inspection of multiples of structural members, which need to be inspected.

With regards to claim 4 / 1, Beaty discloses all features and elements discussed in claim 1, but do not disclose information to a movement axis and / or a rotation axis which is set with respect to said structural member.

Watanabe discloses step of three-dimensional model data of said structural member include information related to a movement axis and rotation axis which is set with respect to said structural member (see column 6 lines 1 – 8 – a motion program is use to move / rotate the three-dimensional image of the structural member). One skill in the art would include step of moving or rotating the structural member is because to inspect the structural member at all views to find if there is any defects, in order to correctly correct the defect.

3. Claims 3 and 4 / 3 are rejected under U.S.C. 103(a) as unpatentable over Beaty ('756) in view of Watanabe ('963) as applied to claim 2 further in view of Michael (US pat no 6,173,070).

With regards to claim 3, Beaty discloses all the features and elements discussed in claim 2, and Watanabe discloses calculates a coordinate position at which said imaged structural member is to be positioned on a three-dimensional model (see column 7 lines 15 – 28 – three dimensional are created from the points shown in figure 10A), updates the three-dimensional model data of the whole of said machine tool on the basis of the calculated coordinate position data (see column 7 lines 30 – 48 – the motion of robot's coordinates are updated every time it moves) and the three dimensional model data of the whole of said machine tool which are stored in said model data storing means (see column 1 lines 57 – 59). But Watanabe does not disclose correlating three-dimensional shape data with one another. Michael discloses correlating three-dimensional shape data with one another (see figure 2 – 104). One skill in the art would include correlating three-dimensional image data with one another because to determine the object of interest within the present three-dimensional image, to find the correct location of the object.

With regards to claim 4 / 3, see the rationale and rejection for claim 4 / 1.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Liew whose telephone number is (571)272-8623. The examiner can normally be reached on 9:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571)272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**Alex Liew**  
**AU2624**  
**4/29/07**

  
JOSEPH MANCUSO  
SUPERVISORY PATENT